Docket No.:   HEWAYS.015A6   October 28, 2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant	:	Edwin C. Iliff
App. No	:	09/785,044
Filed	:	February 14, 2001
For	:	AUTOMATED DIAGNOSTIC SYSTEM AND METHOD INCLUDING REUSE OF DIAGNOSTIC OBJECTS
Examiner	:	Srirama Channavajjala
Art Unit	:	2166

REPLY TO EXAMINER'S SUPPLEMENTAL ANSWER

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Reply Brief is in response to the Examiner's Answer mailed June 30, 2008 and the Supplemental Examiner's Answer mailed August 28, 2008 in the above-captioned application.

Summary of Response

In the Examiner's Supplemental Answer, the Examiner maintains the rejection of the pending claims, including independent Claims 1, 6, and 9, and 11, and dependent Claims 2-5, 7-8, 10, and 12-52:

(1)   The Examiner maintains that the subject matter of each of Claims 6-10, 20-42 and 49-51 do not constitute patentable subject matter under 35 U.S.C. § 101.

(2)   The Examiner maintains that Claims 48-49 and 51-52 fail to comply with the written description requirement of 35 U.S.C. § 112 ¶1.

(3)   The Examiner maintains that the subject matter of each of Claims 6-9, 20-27, 29-38, 40-42, and 49-51 is anticipated by U.S. Patent No. 5,868,669 issued to Iliff ("Iliff").

(4)   The Examiner maintains that: the subject matter of each of Claims 1, 3-5, 10-13, 15-19, 43-48 and 52 is obvious over Iliff, in view of U.S. Patent No. 6,149,585; the subject matter of Claims 2 and 14 is obvious over Iliff in view of U.S. Patent No. 6,149,585 in further view of U.S. Patent No. 6,598,035; and, the subject matter of Claims 28 and 39 is obvious over Iliff in view of U.S. Patent No. 6,598,035.

Appellant addresses each of the above items in the remarks below.

REMARKS

I. Claims 6-10, 20-42, And 49-51 Recite Patentable Subject Matter

In the Examiner's Supplemental Answer, it is maintained that Claims 6-10, 20-42, and 49-51 constitute unpatentable subject matter under U.S.C. § 101. In maintaining the rejection, it appears that the Examiner recognizes that the subject matter of independent Claims 6 and 9 is directed to a machine, but the Examiner argues that "whether a claim recites a machine implemented process is not determinative of whether that process claim is statutory."[1] The Examiner further states that, as in *Gottschalk*, Claims 6 and 9 are "so abstract and sweeping as to cover both known and unknown uses of the underlying 'software algorithm'." Appellant respectfully disagrees.

Appellant respectfully disagrees with the Examiner assertion that "claims 6, 9 in the instant application (software routines or merely algorithms) share the same characteristics as the claims in *Gottshcalk* [sic]." *Gottschalk*'s claims were an attempt to preempt a mathematical equation, directed to a method of converting binary-coded-decimal (BCD) numerals into pure binary numerals (i.e., pure mathematical equations). As stated by the Court in *Gottschalk*, "the claims were not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use." Claims 6 and 9 do not have such deficiencies. First, the claims are specifically limited to the art of medical diagnosis. Second, the claims are directed to machines capable of running the recited objects. Third, the claims are limited to the particular end use of outputting a patient diagnosis. Accordingly, Appellant respectfully disagrees with the similarities drawn by the Examiner between Claims 6 and 9 and the claims recited in *Gottschalk*.

Further, unlike *Gottschalk*, Claims 6 and 9 encompass a computer-implemented system that is useful and accomplishes a practical application. That is, it produces a "useful, concrete and tangible result."

An invention is "useful" if it satisfies the utility requirement of Section 101.[2] The utility requirement provides that the utility of an invention must be (i) specific, (ii) substantial and (iii) credible.[3] The requirement whereby a claim must have specific and substantial utility excludes "throw-away," "insubstantial," or "nonspecific" uses, e.g., using a complex machine as a

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1 Examiner's Supplemental Answer, pg. 20.

2 MPEP 2106(IV)(C)(2)(2)(a), 8th Edition, Revision 6 (September 2007).

3 MPEP § 2107 and Fisher, 421 F.3d at 1372, 76 USPQ2d at 1230 (citing the Utility Guidelines with approval for interpretation of "specific" and "substantial").

paperweight. The utility of the subject matter of Claims 6 and 9 is that it is directed to a machine capable of providing a patient diagnosis. This utility is specific and substantial and does not encompass a "throw-away" use. Further, the MPEP states if an Applicant asserts that if the claimed invention is useful for a particular purpose (i.e., has a "specific and substantial utility") and there has been no question of the credibility of this statement, the invention fulfills the "utility" requirement.[4] As Appellant has asserted that the claimed invention is useful for a particular purpose (i.e., has a "specific and substantial utility") and there has been no question of the credibility of this statement, Claims 6 and 9 are useful under the "utility" requirement of Section 101.

For an invention to be "tangible," a claim must set forth a practical application to produce a real-world result.[5] In other words, the result must not be "abstract."[6] Claims 6 and 9 describe a machine capable of producing a diagnosis of a patient's medical condition based on an analysis of symptoms. Such a diagnosis is required by the practice of medicine and must be established before a treatment is prescribed to improve or stabilize the patient's medical condition. Adequate healthcare resulting from a satisfactory diagnosis is essential for modern society, as is the use of computers and software to facilitate this good. The analysis of the patient symptoms is a practical application of the computer implemented system designed to produce a real-world result, a patient diagnosis, and cannot be considered an abstract application. Accordingly, the inventions embodied by Claims 6 and 9 are tangible.

A concrete result is one that can be substantially repeatable.[7] The question of whether an invention produces a "concrete" result arises when a result cannot be assured.[8] There is no such question in the instant case. The diagnostic objects of Claim 6, when presented with identical parametric input, will produce identical results. Accordingly, the inventions of Claim 6 and 9 produce a "concrete" result as the result is substantially repeatable.

Claims 6 and 9 recite <u>a computer-based medical diagnostic system so as to output a diagnosis of a patient</u>. Appellant respectfully submits that this computer-implemented system

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4 MPEP 2107(II)(B)(1) 8th Edition, Revision 6 (September 2007) ("[i]f the applicant has asserted that the claimed invention is useful for any particular practical purpose (i.e., it has a "specific and substantial utility") and the assertion would be considered credible by a person of ordinary skill in the art, do not impose a rejection based on lack of utility").

5 MPEP 2106(IV)(C)(2)(2)(b), 8th Edition, Revision 6 (September 2007) (citing *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972) (invention ineligible because had "no substantial practical application.").

6 *Id.*

7 MPEP 2106(IV)(C)(2)(2)(c), 8th Edition, Revision 6 (September 2007).

8 Id. (citing *In re Swartz*, 232 f.3d 862, 864 (Fed. Cir. 2000)).

constitutes a "machine" producing a useful, tangible, and concrete result under 35 U.S.C. § 101. Accordingly, the invention of Claim 6 constitutes protectible subject matter under 35 U.S.C. §101.

In view of the foregoing, Appellant respectfully requests reconsideration and withdrawal of the rejection of Claims 6-10, 20-42, and 49-51.

II. Claims 48-49 And 51-52 Have Explicit Written Description Support

The Examiner argues that as each disease object is selected/invoked by the system, it cannot be selected/invoked by a disease object. Appellant respectfully disagrees.

In the Examiner's Supplemental Answer, the Examiner contends that Appellant's specification disclosure, which the Examiner states as "each disease object is elected/invoked by the system," is incompatible with the claimed feature of the disease object directly invokes another disease object. Appellant disagrees there is incompatibility, as the object is part of the system.

Also, the Examiner does not address the explicit support present in the disclosure for the claimed feature of the disease object directly invokes another disease object. Paragraph [0084] recites "the Appendicitis Disease Object now invokes another disease object that is an expert in, say, Small Bowel Obstruction. That object takes a look, asks some questions, and passes the patient on to still other disease objects." In this example, the Appendicitis Disease Object is unable to provide a diagnosis based on the patient data. That disease object then invokes another disease object to resolve the symptoms. If that disease object is unable to provide a diagnosis, that object takes a look, asks some questions, and passes the patient on to still other disease objects. As such, the disclosure provides explicit support for one disease object selecting/invoking another disease object. Appellant respectfully submits that the disclosure of the specification describes the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.

In view of the foregoing, Appellant respectfully requests reconsideration and withdrawal of the rejection of Claims 48-49 and 51-52.

III. Claims 6-9, 20-27, 29-38, 40-42, And 49-51 Are Novel Under 35 USC § 102(b)

Claim 6

A. Iliff does not disclose the claimed feature of: "a plurality of objects which interact to determine a diagnosis of a patient, wherein the objects includes at least two diagnostic objects comprising: a disease object, a symptom object, a valuator object, a question object, a node object and a candidates object"

Iliff does not disclose the particular objects recited, or objects as defined by the subject specification, as discussed below.

1. Iliff Does Not Disclose the Particular Objects of Claim 6 and Their Interaction

Appellant respectfully submits that Iliff does not disclose the following feature recited in Claim 6: a plurality of objects which interact to determine a diagnosis of a patient, wherein the objects includes at least two diagnostic objects comprising: a disease object, a symptom object, a valuator object, a question object, a node object and a candidates object.

In the Examiner's Supplemental Answer, the Examiner states that Iliff discloses the particular objects through "diagnosises [sic] and symptoms, each diagnosis associated with symptoms in MDATA system, lines 24-35 in col. 12[9], lines 38-45 in col. 21[10], and line 24 in col. 35 thru line 49 in col. 42[11]." Iliff does disclose diseases and symptoms and their relationships, but Iliff does not disclose a symptom object or a disease object which interact to determine a diagnosis as claimed by Appellant.

In the terminology section of the subject specification, an object is defined as a "combination of data and processes that manipulate data." See Paragraph [0082]. Furthermore,

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9 "Carefully crafted questions, used in the taking of a medical history, are the main tools that the MDATA system uses to assess the problems of patients. The key to getting a good history is to ask the right questions. In a sense, in the diagnostic process questions are like tests. It is important to note that the right questions are basically always right; they don't change. Although they may be refined over time, in general, once excellent and well-crafted questions are developed they are good for a very long time. Of course, as new diseases are discovered, e.g., toxic shock syndrome and AIDS, new sets of diagnostic questions are developed that are disease specific." Iliff, Col. 12, lns. 24-35.

10 Once a caller has logged in or registered, the system provides a choice of two other processes in the current embodiment. The first of these processes is the evaluation process 254 that performs a patient diagnosis. The second of these is a treatment table process 256 to obtain current treatment information for a particular disease or diagnosis. In another embodiment, other choices are added to access other medical information processes. Iliff, Col. 21, lns. 38-45.

11 X. Evaluation Process Referring now to FIGS. 10a and 10b, the evaluation process 254 defined in FIG. 7d will be described. This process 254 is called if the patient has selected the Diagnostic System choice in the system selection menu (FIG. 7d, state 344). Beginning at a start state 470, the computer moves to state 471 and recites a identification method menu to request complaint identification. After the initial screening questions (state 306, FIG. 7a) are completed and a medical record (registration function 252) has been opened, the MDATA system 100 asks the patient to describe the complaint. The identification of the patient's problem is one of the most important steps in the evaluation process. The system 100 has built-in safeguards to ensure that the patient understands the questions and that the MDATA system 100 understands the patient's complaint. For example, the system keeps tables of synonyms so that any problem regarding the semantics of a question or a response can be quickly resolved. The complaint may be identified in one of four ways: by anatomic system 472, by cause 476, by alphabetic groups 480 or by catalog number 482. Iliff, Col. 35, lns. 24-44.

"the object is said to "hide" data; it provides the powerful ability of decoupling the world that uses an object from the object itself." See Paragraph [0089]. Examples of objects, such as disease object 2930 and symptom object 2940 are shown in Figure 29b. The disease and symptom objects in Figure 29b encapsulate all the data and processes of a typical disease or symptom object. See Paragraph [0472]. In contrast, the symptoms and diseases in Iliff appear to be separate, with data in one of the databases (e.g., Figure 6, patient medication database 270) that is separated from the one process (e.g., Figure 6, evaluation process 254) that would operate on the data. Since an object as defined by the subject specification is a combination of data and processes that manipulate data and hides the data from the rest of the world, Iliff does not disclose the object implementation as defined by Appellant. As such, the diseases and symptoms associated with Iliff's MDATA system do not disclose objects, including a disease object and a symptom object.

In the Supplemental Examiner's Answer, the Examiner states that "programming in an object oriented language such as C++ is a general technological tool that is not different than precisely specifying the diagnostic objects recited in claims [sic] 6." C++ is related to, but not the same as objects. C++ is a tool used to generate software code (that may or may not include objects). Programming in an object oriented language such as C++ is a general technological tool, but disclosing the tool is not the same as specifying the particular objects created by the tool.

Programming in an object oriented language such as C++ (a tool) is not the same thing as specifying the diagnostic objects (products of the tool) recited in Claim 6. If such logic were to be followed, then knowledge of automotive design and manufacturing (a tool) would identify the specific output of the factory (products of the tool), whether it be a Toyota Prius or a Chevrolet Corvette. But an automotive design and manufacturing tool is not the same as, and would not disclose, a Toyota Prius. Mutatis mutandis, Iliff's disclosure of C++ does not disclose the particular objects claimed by Appellant because objects are one of many products of the C++ programming tool.

Further, Iliff does not disclose the remaining particular objects recited as part of the claimed at least two diagnostic objects. The Examiner specifically addressed the disease object and the symptom object, but the Examiner did not address the remaining particular objects: a

valuator object, a question object, a node object and a candidates object. Appellant believes that Iliff does not disclose the remaining particular objects recited.

Claim 6 recites: a plurality of objects which interact to determine a diagnosis of a patient. With respect to the interaction of objects, Figure 29b of Appellant's specification provides an example. For instance, the interaction between the disease object 2930, symptom object 2940, and question valuator object 2950 is discussed as follows:

> Disease Object 2930 selects one of its Symptom Objects and moves to method 2941 to obtain the value of that symptom in the on-line patient. Symptom Object 2940 contains all data and processes of a typical Symptom Object ... The Symptom Object initiates internal processing to obtain actual symptom values and proceeds to method 2951. Method 2951 is one method of a Question Valuator Object 2950 ... In general, a Valuator Object is responsible for performing the computations required to compute the value of a symptom at some time t. A question valuator object initializes the processing required to select and ask a human questions and then advances to method 2961. See Paragraphs [0472]-[0473].

Appellant respectfully submits that Iliff does not disclose the particular objects, much less the interaction of the objects as recited in Claim 6.

2. Iliff Does Not Disclose the Objects which Interact in Claim 6

Appellant respectfully submits that Iliff does not disclose the following feature recited in Claim 6: a plurality of objects which interact to determine a diagnosis of a patient. Furthermore, Appellant respectfully submits that Iliff does not disclose an object as defined by the subject specification.

In Re Zletz defined a standard for the examination of claim terms.[12] There, the Board erred in its claim interpretation by applying an inapplicable legal premise used by the courts in litigation. The correct standard for reviewing a claim was stated as follows:

> During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow. When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art.[13]

As a result, when a meaning for a claim term is given in a specification, an Examiner should examine the claim term using that meaning. *Zletz* is currently followed by the

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12 In Re Zletz, 893 F.2d 319 (1989).
13 Id @ 321-322.

examination policy of the U.S. Patent and Trademark Office[14] and the precedent of the Board of Appeals[15] as the standard for examination of claim terms.

Appellant's specification provides a "Terminology" section[16] and a section describing "The Object-Based Method."[17]   In the terminology section, an object is defined as a "combination of data and processes that manipulate data." See, Paragraph [0082]. Furthermore, "the object is said to "hide" data; it provides the powerful ability of decoupling the world that uses an object from the object itself." See Paragraph [0089].

In the Supplemental Examiner's Answer, the Examiner cites to Col. 14, lns. 12-13, disclosing that Iliff has a system that is written in C\C++ so the MDATA system can interface with other computer programs and operating systems, stated by Iliff as follows:

> The MDATA system uses a new authoring language that is specifically designed to allow medical knowledge to be encoded into a usable computer program. The presently preferred voice response or telephony version of the MDATA system is written in object-oriented Microsoft C\C++ version 7.0. This allows the MDATA system to easily interface with industry-standard database programs. Iliff, Col. 14, lns. 7-13.

This citation states that Iliff's system is written in C\C++. Even so, Iliff does not disclose that each symptom and disease is a combination of data and processes like the objects as defined by Appellant's specification. Instead, the symptoms and diseases appear to be separate, with data in one of the databases (e.g., Figure 6, patient medication database 270) that is separated from the one process (e.g., Figure 6, evaluation process 254) that would operate on the data. Since an object as defined by the specification is a combination of data and processes that manipulate data and hides the data from the rest of the world, Iliff does not disclose the object implementation as defined by Appellant.

Although not discussed in detail by the Examiner, Iliff does use the term "object" in medical history objects database 266 in Figure 6. Although not specifically defined by Iliff, the

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14 See MPEP 2173.05(a): "When the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art. In re Zletz, 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)."

15 See also recent Board of Appeals case, Ex Parte Kumagawa et al, appeal number 2008-1294 (decided September 26, 2008): "When the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art. *In re Zletz*, 893 F.2d 319, 321-22 (Fed. Cir. 1989)."

16 Appellant's specification, Section "I. Terminology" Paragraphs [0052]-[0082].

17 Appellant's specification, Section "III The Object-Based Method," Paragraphs [0085]-[0180].

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medical history objects database 266 appears to be a record, character, or similar static label containing attributes of a medical condition, such as a medical record. See e.g., Iliff, Col. 23, lns. 47-50 and Col. 24, lns. 1-14. Iliff's medical history objects are not processes or executable code. In contrast, each object as defined by Appellant's specification, includes processes, such as executable code.

Therefore, Appellant respectfully submits that Iliff does not disclose the objects as defined by Appellant's specification.

B. Iliff does not disclose the claimed feature of: "wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects"

Appellant respectfully submits that Iliff does not disclose the following feature recited in Claim 6: wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects.

In the Examiner's Supplemental Answer, the Examiner states that this hierarchical relationship feature is disclosed in Iliff through a directed graph of a node map (col. 14, ln. 64 – col. 15, ln. 24) and a process of initial screening questions (col. 35, lns. 25-44) to migraine screening questions (col. 39, lns. 61-67) to migraine confirmation questions (col. 40, lns. 18-25). Iliff recites that "[e]ach question can be considered a node, and the acceptable responses to this question are branches leading to the next question (node)." Iliff, col. 15, lns. 1-4. As a result, it appears that the Examiner is citing the questions and nodes in the node map in Iliff as disclosing the claimed wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects because Iliff's answer to one question leads to the next question. However, Iliff does not disclose the hierarchical relationship feature for the following reasons.

First, Appellant respectfully submits that the nodes and questions in Iliff are not the same as the objects claimed by Appellant. As discussed above, Appellant's specification defines an object as a "combination of data and processes that manipulate data." See Paragraph [0082]. A node appears to be an intersection point in an algorithm. Iliff, Col. 15, lns. 1-11. An intersection point is not a combination of data and processes that manipulate data because an intersection point does not contain processes such as executable code. As such, a node does not disclose an

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object. Likewise, a question is not a combination of data and processes, as a question is not a process, and therefore a question is also not an object.

Second, Appellant respectfully submits that the node map in Iliff does not disclose objects in a hierarchical relationship such that the result of an object is input to another object. In Appellant's specification, an example of wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects is shown in Figure 29b. An object hierarchy organizes objects of different levels to a sequence that minimizes the number of objects required for a task, stated as follows:

> In general, each object performs its own tasks and calls upon other objects to perform their tasks at the appropriate time. Over time, the sequence of operations creates a natural task hierarchy, from higher to lower levels of detail, using as many or as few levels as is required to perform the main task. At the same time, the hierarchy represents logical interpretations and meanings at different levels. Thus, at the lowest level, a patient is answering a single question; at the middle level, this is interpreted as a change in symptom information about the patient; at the highest level, it may result in a reranking of the tentative diagnosis of several competing diseases. See Paragraph [0470].

In contrast, the node map in Iliff is a series of multiple choice questions with branches leading to the next question. Iliff, col. 14, ln. 67 - col. 15, ln. 5. The node map in Iliff does not organize objects of different levels to a sequence that minimizes the number of objects required for a task. As such, the node map in Iliff does not disclose a hierarchical relationship between the nodes, and therefore does not disclose objects arranged in the claimed feature of wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects.

C. **Iliff does not disclose the claimed feature of: "at least one of the diagnostic objects directly invokes another of the diagnostic objects in a computer-based medical diagnostic system so as to output a diagnosis of a patient based on the prior object invocation"**

Appellant respectfully submits that Iliff does not disclose the following feature recited in Claim 6: at least one of the diagnostic objects directly invokes another of the diagnostic objects in a computer-based medical diagnostic system so as to output a diagnosis of a patient based on the prior object invocation.

In the Examiner's Supplemental Answer, the Examiner cites Iliff Col. 39, lns. 61-67, as disclosing this invoking feature. The cited section of Iliff states as follows:

> The MDATA system 100 is knowledgeable about the difference between classic, common, and all other variants of migraine, but for this discussion the general term "migraine" will be used. After reordering the first list and placing migraine at the top, the MDATA system 100 then asks several questions related specifically to migraine headaches. These are called the "migraine screening questions."

The cited portion discloses a system asking migraine screening questions related to headaches. The Examiner appears to cite the migraine and questions as objects, and the migraine (object) at the top of the list invoking a question (object). Appellant respectfully disagrees. A system asking "several questions related specifically to migraine headaches" is not the same as an object invoking another object as claimed by Appellant for the following reasons.

First, Iliff does not disclose objects as defined by Appellant's specification for at least the reasons discussed above.

Second, Iliff does not disclose invocation of objects. As disclosed in Appellant's specification, a first object can invoke a second object to allow the second object to access the data and/or processes of the first object. See Paragraph [0089]. In the cited portion of Iliff, it appears that the Examiner refers to the migraine as an object that is the most probable cause of the disease, which invokes a question related to the migraine, where the question is another object. However, Iliff's migraine does not invoke the question. Instead, the system 100 performs the actions of reordering a list and asking several headache questions. The system 100 is external the migraine questions and data. Further, the system 100 is not an object that invokes another object. Similarly, the questions do not invoke other questions without the assistance from the system. As such, Iliff does not disclose <u>at least one of the diagnostic objects directly invokes another of the diagnostic objects in a computer-based medical diagnostic system so as to output a diagnosis of a patient based on the prior object invocation</u> as claimed by Appellant.

Claim 9

D. Iliff does not disclose the claimed feature of: "a plurality of diagnostic objects which interact to determine a diagnosis of a patient, wherein the diagnostic objects include at least a plurality of disease objects, a plurality of symptom objects and a plurality of valuator objects"

Appellant respectfully submits that Claim 9 is novel over Iliff for at least the reasons discussed above in relation to Claim 6: Iliff does not disclose the particular objects recited and objects as defined by Appellant's specification.

In addition, Iliff does not disclose <u>a plurality of valuator objects</u> as claimed by Appellant. In the Examiner's Supplemental Answer, the Examiner cites Iliff's evaluation process as disclosing a valuator object. In Appellant's specification, a valuator object is defined as: "A Valuator Object (VO) is a software object that represents the actions required to establish the value of a symptom in a patient at a specified time." See Paragraph [0148]. Appellant's specification gives examples of values established by the valuator object, including high, medium, and low. See Paragraph [0124].

In contrast, Iliff's evaluation process is shown in Figure 6 (evaluation process 254). The evaluation process 254 reads and writes data to databases, such as the patient medical history database 268, as stated by Iliff: "The patient medical history (PMH) database 268 is created at run-time by the evaluation process 254 or by use of a past medical history questionnaire. The PMH database 268 is read by the evaluation process during run-time." Iliff, Col. 24, lns. 15-18. Iliff's evaluation process 254 does not establish a value of a symptom as stated by the valuator object definition, and therefore, does not disclose <u>a plurality of valuator objects</u> as claimed by Appellant.

E. Iliff does not disclose the claimed feature of: "wherein at least some of the diagnostic objects perform their own tasks and directly call upon other diagnostic objects to perform their tasks at the appropriate time in a computer-based medical diagnostic system so as to output a diagnosis of a patient"

Appellant respectfully submits that Iliff does not disclose the following feature recited in Claim 9: <u>wherein at least some of the diagnostic objects perform their own tasks and directly call upon other diagnostic objects to perform their tasks at the appropriate time in a computer-based medical diagnostic system so as to output a diagnosis of a patient</u>. Appellant respectfully

submits that Claim 9 is novel over Iliff for at least the reasons discussed above in relation to Claim 6: Iliff does not disclose diagnostic objects that directly invoke or call other diagnostic objects.

In addition, Iliff does not disclose the recited feature of: <u>objects perform their own tasks</u>. In the Examiner's Supplemental Answer, the Examiner cites the evaluation processes in Col. 21, lns. 38-45, Col. 39, lns. 36-41, and Col. 35, ln. 24 – Col. 42, ln. 49, as an object performing their own task. As stated above, Iliff's evaluation process 254 reads and writes data to databases. As such, Iliff's evaluation process 254 is separate from the databases. Since an object as defined by Appellant's specification is a combination of data and processes that manipulate data and hides the data from the rest of the world, Iliff's evaluation process 254 does not disclose the object implementation as defined by Appellant.

Further, Iliff does not disclose objects that <u>perform their tasks at the appropriate time</u>. An example of objects that <u>perform their tasks at the appropriate time</u> is shown in Figure 29b. In that figure, diagnostic objects are shown performing their task at an appropriate time, such that a higher level object performs their tasks before a lower level diagnostic object. As a result, the higher level object controls which tasks are performed by a lower level object.

In view of the foregoing, Appellant respectfully requests reconsideration and withdrawal of the rejection of Claims 6-9, 20-27, 29-38, 40-42, and 49-51.

IV. <u>Claims 1, 3-5, 10-13, 15-19, 43-48 And 52 Are Nonobvious</u>

<u>Claims 1 and 11</u>

The preamble of Claim 1 recites a method of diagnosing a patient and the preamble of Claim 11 recites a computer-implemented method of diagnosing a patient. The remaining features of Claims 1 and 11 are the same. As such, Claims 1 and 11 are discussed together in this section.

A. **<u>Iliff does not disclose the claimed feature of: "wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse"</u>**

Iliff does not disclose the archived symptom objects feature recited in Claims 1 and 11: <u>wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse</u>.

In the Examiner's Supplemental Answer, the Examiner states that archived symptom objects are disclosed in Figure 6 of Iliff through a patient medical history database 268 and disclosed through the problems tracked by the meta functions in Iliff in Col. 13, lns. 55-62. Appellant respectfully disagrees for the following reasons.

First, the patient medical history database in Iliff does not disclose an object as defined by Appellant's specification. In the Examiner's Supplemental Answer, the Examiner states that the patient medical history database teaches archived symptom objects. As discussed above, Appellant's specification defines an object as a "combination of data and processes that manipulate data." See Paragraph [0082]. As such, each symptom object has its own process. In contrast, the patient medical history database stores a patient's individual medical history, and does not contain discrete objects that are combinations of processes or manipulate data. Iliff, Col. 24, lns. 18-20. Therefore, the database is not an object as defined by Appellant's specification.

Second, the problems counted by the meta functions in Iliff do not disclose an archived symptom object that is available for reuse as claimed by Appellant. Appellant's specification describes the reuse of objects:

> A benefit of the object-based system having Symptom Objects and using the Alternative Symptom feature is that Symptom Objects and their underlying objects, e.g., Valuator Objects, Question Objects and Node Objects, can be "reused". In one embodiment, the author of a new disease script can reuse previously written and debugged objects by a few steps, which may include, for example, renaming one or more of the objects and assigning alternative weights. This object reuse capability permits faster coding, testing and release of new disease scripts. See Paragraph [0246].

In the Examiner's Supplemental Answer, the Examiner states that the "same problem consulted in the past corresponds to archived symptoms." The meta acts as a counter, keeping track of the number of times the system has been consulted for the same problem. As such, the problems in Iliff are being tracked by the meta functions, and are not being consulted as stated by the Examiner. Iliff's problems are not available for reuse as claimed because the problems are not being used at all (or reused), but instead the problems are being tracked. Therefore, the problems counted by the meta functions do not disclose wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse as claimed by Appellant.

B. <u>Iliff does not disclose the claimed feature of: "providing a plurality of disease objects, each disease object associated with a plurality of symptom objects"</u>

Iliff does not disclose the following feature recited in Claims 1 and 11: <u>providing a plurality of disease objects, each disease object associated with a plurality of symptom objects</u>.

In the Examiner's Supplemental Answer, the Examiner's arguments are the same as the Examiner's arguments against Claim 6 in the Examiner's Supplemental Answer.

Appellant respectfully submits that Claims 1 and 11 are novel over Iliff for at least the reasons discussed above in relation to Claim 6: Iliff does not disclose the particular objects recited and objects as defined by Appellant's specification.

C. <u>Iliff does not disclose the claimed feature of: "invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation"</u>

Iliff does not disclose the following feature recited in Claims 1 and 11: <u>invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation</u>.

In the Examiner's Supplemental Answer, the Examiner's arguments for the invoking feature are similar to the Examiner's arguments against Claim 6 in the Examiner's Supplemental Answer.

Appellant respectfully submits that Claims 1 and 11 are novel over Iliff for at least the reasons discussed above in relation to Claim 6: Iliff does not disclose the invoking feature.

D. <u>Iliff does not disclose the claimed feature of: "assigning a weight for each symptom, wherein a particular disease object includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more related alternative symptoms, wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse"</u>

Iliff does not disclose the following feature recited in Claims 1 and 11: <u>assigning a weight for each symptom, wherein a particular disease object includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more related alternative</u>

symptoms, wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse.

In the Examiner's Supplemental Answer, the Examiner states that Iliff does not disclose a preferred weight and an alternative weight. The Examiner cites Col. 6, lns. 25-48, of U.S. Patent No. 6,149,585 to Gray as disclosing preferred symptoms and alternative symptoms. In the cited portion, Gray discusses "different" symptoms, stated as follows:

> Thus, correlation levels or weighted values could be determined for each symptom and presented to the user. For example, on a scale from 1 to 5, a palpable mass could have a value of 4, in a benign bone tumor diagnosis whereas any of the first four symptoms might only have a value of 1.

In contrast, Claims 1 and 11 recite that the particular disease object includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more related alternative symptoms. In Appellant's specification, the use of alternative symptom objects is shown in Figures 30 and 31. For instance, the use of alternative symptoms is discussed as follows:

> Each symptom S of that list must be defined and described. Moving to state 3006, one symptom S of the list is established and defined in terms of its values and their diagnostic weights. Moving to a decision state 3010, if the symptom object can perhaps be used as alternative symptoms in other disease objects, the diagram moves to state 3012; otherwise it moves to a decision state 3014. At state 3012, the symptom is established as an alternative symptom in the applicable disease objects ... Moving to a decision state 3034, process 3000 shows a portion of the evaluation process that deals with the use of alternative symptoms, which are used to save on-line time. It may be the case that, for disease D, symptom S has an acceptable alternative symptom that has already been evaluated. If so, the diagram bypasses evaluation of symptom S and instead moves to state 3036. But if, at decision state 3034, there is no alternative symptom, process 3000 moves to state 3038 for evaluation of symptom S. ... The Alternative Symptoms feature allows the diagnostic system to substitute specified symptom values for others in order to bypass time-consuming evaluation of a given symptom when acceptable alternative symptom values are already available. The feature accommodates the individual preferences of medical authors, simplifies the processing of symptoms stored in various equivalent formats, and allows the sequencing of symptom evaluation to be more adaptive to the dynamics of an on-line diagnostic session, instead of depending on prescribed sequence of symptom evaluation. See Paragraphs [0476]- [0478].

In other words, the "same" symptom is being expressed in different ways (preferred and alternative), and are not different symptoms as in Gray.

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In view of the foregoing, Appellant respectfully requests reconsideration and withdrawal of the rejection of Claims 1, 3-5, 10-13, 15-19, 43-48 and 52.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: _____10/28/08_____   By: _____

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